Attorney Docket No. IR 3709 NP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Reilly, J., et al.	Group Art Unit: 1794
Serial No.: 10/776,884	Examiner: FERGUSON, Lawrence D
Filed : February 11, 2004	Confirmation # 3393

For: ARTICLE DISPLAYING EDGEWISE, ANGULAR MULTI-CHROMATIC CHARACTERISTICS AND METHODS OF USE THEREOF

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant hereby appeals the decision of the Primary Examiner finally rejecting claims 1-30, 32 and 35 of the above-identified Application. Appellant filed a Notice of Appeal pursuant to 37 C.F.R. §1.191 on March 10, 2009 along with a Pre-Appeal Brief Request for Review.
No decision on the Request has been rendered before the time period for filing this Appeal Brief. The Appeal Brief is compliant with the requirements of 37 C.F.R. § 41.37. This Brief is being filed on the first business day after the point two months after the filing of the Notice of Appeal.

TABLE OF CONTENTS

APPEAL BRIEF

U.S. Patent Application No. 10/776,884

I. Real Party in Interest

The real Party in interest, as evidenced by the assignment document Reel/Frame 014358/0441 recorded February 20, 2004, is Arkema France.

II. Related Appeals and Interferences

There are no other appeals or interferences known to Appellant that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1, 3-30, 32 and 35 are pending. Claims 2, 31, 33 and 34 have been cancelled. Claims 1, 3-30, 32 and 35 stand rejected and are being appealed. A copy of the claims as currently pending is found in the Claims Appendix.

IV. Status of Amendments

All proposed amendments have been entered. The amendments presented after Final Rejection were entered by the Examiner.

V. Summary of Claimed Subject Matter

Independent claim 1

The claims are to an article having angular multichromatic characteristics – that is, the observed color of the light transmitting layer, when viewed along the edge appears different than the principle color solely due to the viewing angle. The article has two or more layers in optical contact, each with a principle color, at least one layer being light-transmitting, where Each layer of the article has a thickness of 0.1 to 100 mm, and the light transmitting layer has a thickness of from 1 to 100 mm.

Applicant entered samples of Applicant's commercial product into the application during an interview with Examiner Ferguson on July 19, 2007. The invention is most easily understood

when viewing these samples – the edge of the article appearing to change colors, depending on the viewing angle.

The support for the claim elements given below refer to the original description.

"An article", "two or more layer", "each layer having a principal color where one or more layers is light transmitting", "at least one edge exposing at least one light transmitting layer", "the observed color of said exposed light transmitting layer, when viewed along said edge", "appears different than its principal color", "solely due to the viewing angle".- all supported in page 2, paragraph [006].

"optical contact", supported in paragraph [0041] and [0042] on page 11, in which said optical contact is defined

"angular multichromatic characteristics", supported on page 4, paragraph [0019], lines 3, 4.

"each layer of the article has a thickness of from greater than 0.1 to 100 mm", supported in paragraph [0027] on page 6, line 2.

"at least one light transmitting layer has a thickness of from 1 to 100 mm, supported in paragraph [0027] lines 2 and 6.

VI: Grounds of Rejection to be Reviewed on Appeal

The grounds for rejection to be reviewed on Appeal are whether claims 1, 3-30, 32 and 35 are unpatentable under 35 U.S.C. §103 over Kito et al.(US 5,585,425).

More specifically, the main questions are; a) is Applicant's claimed thickness an optimizable property? and isApplicant's claimed "angular multichromatic effect" solely due to viewing angle an inherent property?

VII: Arguments

Background

Applicant has created a multi-layer article (acrylic sheet that can be formed into articles) in which the color of the edge of the article is different than that of the principle colors – creating a stunning color changing effect depending on the angle at which the edge is viewed that "will catch the consumer's eye", according to the product literature. The color change is due solely to

the viewing angle (an angular multichromatic effect). The product is commercially successful (a Deere factor), sold as Plexiglas® Edge FX™. Several samples of the commercial product were put into the record during Applicant's July 19, 2007 interview with the Examiner.

The cited art, Kito et al (U.S. 5,585,425), is to a thermochromatic opaque/transparent composition coating, being transparent at high temperatures and colored opaque at lower temperatures. The coating is used on toy cars to change color or reveal interior features when placed under hot water. My son used to have several of these color-change cars and at one point they came as prizes in cereal boxes. The change (Kito) occurs when viewing the object directly on a surface, not along an edge as claimed by Applicant.

A. The Kito reference teaches:
   a) a thin coating that is generally 2 to 100 microns thick (Col. 12, line 21)
   b) the thin coating reversibly changes from opaque to transparent based on temperature (thermochromatic trigger) (Col. 12, lines 46-54)

B. Applicant claims:
   a) a multi-layer article in which each layer is from greater than 0.1 to 100 mm thick, and the light-transmitting layer is 1 to 100 mm (1000 microns – 100,000 microns) thick.
   b) An angular multichromatic effect, in which the layers do not change color, but the edge appears to change color solely based on the viewing angle.

ARGUMENT

Applicant contends that the present rejection under 35 U.S.C. §103(a) is incorrect, as the Kito reference fails to teach or suggest all of Applicant's claim elements, specifically;

   a) thickness of transparent (light transmitting) layer: Kito 2-100 microns, Applicant Claims 1 to 1000 mm (1000 to 100,000 micron).
   b) Change: Kito changes opacity, Applicant's claim change of (observed) color.
   c) Change cause: Kito – thermal, Applicant's claim – solely due to viewing angle.
   d) View: Kito is viewed along face, Applicant's claim is a view along article's edge.
   e) Effect: Kito teaches an actual change in a physical property (opaque to transparent), while Applicant claims an observed change, yet there is no actual change in the properties of the article.

The specific arguments raised by the Examiner are:

Issue 1: Is the layer thickness of Kito "optimizable" to overlap Applicant's claims?

Kito claims a layer thickness of generally 2 to 100 microns thick (Col. 12, line 21), while Applicant claims each layer is from greater than 0.1 to 100 mm thick, and the light-transmitting layer is 1 to 100 mm thick.

"Generally": The Examiner contends that the Kito reference "does not teach that the thickness cannot be higher than what is generally taught" and that "absent a showing of critical results it would have been obvious to one of ordinary skill to adjust the thickness higher to improve strength and durability".

"Optimizable": The Examiner maintains that thickness is optimizable, and therefore it would have been obvious to optimize for durability. Applicant respectfully disagrees – since the cited Kito reference teaches exactly the opposite. The Kito reference teaches a thermochromic thin coating (Col. 11, lines 57-63), and there are several reasons the coating must be thin (besides the obvious cost savings):

a) The Kito coating must be thin in order to uniformly apply the coating solution (Col. 12, line 25) by spray coating, screen printing, gravure printing, roller coating.

b) The Kito reference requires a coating that must dry quickly during manufacture, (Col. 11, lines 57-63).

c) The only optimization taught by the Kito reference is the 15-20 micron coating thicknesses taught by all the examples – teaching even further away from Applicant's claims..

The Kito reference not only sets a stretched maximum thickness of 100 microns, it teaches and suggests only optimized thicknesses much lower (15-20 microns). A thickness in a region outside that taught by the reference cannot be "optimized" outside that range. One cannot "optimize" the Kito coating outside the limits taught by Kito, based on Kito. Applicant's layer range is outside the Kito limits.

Issue 2: Is Applicant's created angular multichromatic effect an "inherent property" of the Kito article? Applicants claim an article having at least one edge exposing at least one light transmitting layer, wherein the observed color of said at least one exposed light transmitting layer, when viewed along said edge, appears different than its principal color (shows angular multichromatic characteristics) **solely due to the viewing angle,**

"solely" – This is the only point that needs to be argued – since it clearly differentiates Applicant's claims from anything taught or suggested by the Kito reference. Kito requires a thermochromatic effect (a thermo chemical reaction), clearly teaching the opposite of Applicant's claims that the color change is due solely to the viewing angle. **The teaching of Kito's thermochromatic effect DOES NOT teach or suggest Applicant's angular multichromatic effect SOLELY based on viewing angle – but clearly teaches the opposite (i.e. Not Solely).** The teaching of a different chromatic effect teaches away from Applicant's sole chromatic effect.

The Examiner had contended that Applicant's claims have "comprising" language, and therefore Applicant's multichromatic effect is merely one of many possible chromatic effects. Besides being an improper reading of the claim language (Applicant notes that the "wherein" comes after the body of the main claim, in the part of the claim generally referred to as the qualifying phrases; and refers back to the whole article before the transitional phrase, and therefore not related to the "comprising language) - Applicant further amended the claim to ass the "solely" language for even more clarity.

While Kito unquestionably does not teach or suggest Applicant's "solely" chromatic effect, there are also notable other differences.

a) Applicant agrees with the Examiner's statement on page 8, lines 1-3 of the April 30, 2008 office action "Kito does not recognize Applicant's angular multi-chromatic characteristics". Therefore, as the Examiner has stated, The Kito reference fails to teach or suggest all of Applicant's claim limitations.

b) "edge". To have Applicant's claimed edge effect, one needs an edge of sufficient width to see the effect. That is why Applicant claims at least one light transmitting layer having a thickness of 1 to 100 mm. The Kito coating layer at a maximum of 100 microns, Examplified at 15- 20 microns is far to thin to view. Additionally, the Kito substrate is covered by the

thermochromatic coating, and therefore does not have an exposed "edge". The color change in Kito is seen on the broad surface of the article – not on an edge.

c) "Apparent color change": Applicant claims an observed color change on the edge different from the primary color(s) solely due to viewing angle.

1) "Primary colors" Applicant's primary colors of the layers do not change – they only appear to change colors when viewed on an angle along the edge. The colors seen in the Kito reference are the primary colors - not different than the primary color.

2) "Change color" Applicant's article's edge appears to change color. The Kito reference teaches a change in opacity (changes from opaque to transparent).

3) "Observed color" Applicant's color on the edge appears to change. The Kito reference teaches an actual physical-chemical change in properties.

4) "Viewing angle" Applicant's change is caused solely by viewing angle. The Kito reference requires an actual change, due to a thermo-chemical effect, involving a change in matter. Applicant's color change involves no change in matter, but is a created optical effect with the appearance changing related to viewing angle.

"Inherent property" - Applicant admits that the angular edge multichromatic effect is an inherent property of Applicant's article - resulting from Applicant's specific choice of layers, thicknesses, optical contact, and light transmittance. The layers, layerthickness and exposed edge are not taught of suggested by the cited art – and further are taught away from by the Kito refrence.

Conclusion

Applicant believes the following have been shown:

1. The Kito teaching of a thermohromatic effect cannot teach or suggest Applicant's claimed "solely" angular multichromatic effect, and clearly teaches away from it. **This by itself makes Applicant's claims unobvious over the cited art.**

2. Applicant's claimed layer thickness of greater than 0.1 mm (100 microns) can not be obtained by optimization of the Kito teaching of 2 to 100 microns, based on the Kito teachings for a thinner layer, including all examples at 15-20 microns.

3. The Kito reference does not teach or suggest Applicant's solely angular multichromatic effect, since Kito teaches or suggests no transparent "edge" of over 1 mm in thickness, and the Kito material has an actual principal color change while Applicant claims an observed color change without a actual principle color change.

Applicant believes the reasons for rejection have been overcome, and the claims should be allowable to the Applicant. Reconsideration and allowance are requested.

Respectfully submitted,

Thomas F. Roland, Esq.
Attorney for the Applicants Reg. No. 42,110
Customer Number 31684

Date: May 11, 2009

VIII: CLAIMS APPENDIX

Claims as they currently stand

Listing of the Claims

1. (previously presented) An article comprising two or more layers in optical contact, each of said layers having a principal color, wherein one or more of said layers is light transmitting, said article having at least one edge exposing at least one light transmitting layer, wherein the observed color of said at least one exposed light transmitting layer, when viewed along said edge, appears different than its principal color (shows angular multichromatic characteristics) solely due to the viewing angle, and wherein each layer of said article has a thickness of from greater than 0.1 to 100 mm, wherein at least one light transmitting layer has a thickness of from 1 to 100 mm.

2. (cancelled)

3. (original) The article of claim 2 wherein the observed color of said at least one exposed light transmitting layer, when viewed along said edge, changes at one or more threshold viewing angles.

4. (original) The article of claim 1 wherein the observed color of said at least one exposed light transmitting layer, when viewed along said edge, appears to be a mix of two or more principal colors.

5. (original) The article of claim 1 comprising three or more layers.

6. (original) The article of claim 1 comprising two or more layers that are light transmitting.

7. (original) The article of claim 1 wherein all of said layers are light transmitting.

8. (original) The article of claim 1 wherein at least one of said layers is opaque or translucent.

9. (original) The article of claim 1 wherein said two or more layers comprise plastic or glass.

10. (original) The article of claim 9 wherein said two or more layers comprise acrylic polymer.

11. (original) The article of claim 10 wherein said acrylic polymer comprises polymethyl methacrylate.

12. (previously presented) The article of claim 1 wherein said two or more layers are made of the same material.

13. (original) The article of claim 1 having at least two adjacent light transmitting layers.

14. (previously presented) The article of claim 1 wherein the difference between indices of refraction of adjacent layers is 0.1 or less.

15. (original) The article of claim 1 wherein the indices of refraction of adjacent layers are within about 0.5 of each other.

16. (original) The article of claim 1 wherein said layers have indices of refraction greater than air.

17. (original) The article of claim 1 wherein said layers have an index of refraction of at least about 1.05.

18. (original) The article of claim 1 having a depth measured from said edge wherein said depth is variable.

19. (original) The article of claim 18 wherein said depth is varied by cuts through said layers.

20. (original) The article of claim 1 wherein said article is produced by coextrusion or fusion bonding of said layers.

21. (original) The article of claim 1 comprising interlayer material.

22. (original) The article of claim 21 wherein said interlayer material is a liquid having an index of refraction between about 1.05 and about 2.0.

23. (original) The article of claim 1 wherein said two or more layers are light transmitting acrylic polymer having indices of refraction of at least about 1.05 and within about 0.5 of each other, wherein said two or more layers are coextruded.

24. (original) The article of claim 1 wherein said two or more layers are light transmitting acrylic polymer having indices of refraction of at least about 1.05 and within about 0.5 of each other, wherein said two or more layers are separated by an interlayer having a lower index of refraction than said two or more layers.

25. (original) The article of claim 24 wherein said interlayer is a liquid.

26. (original) The article of claim 24 wherein the index of refraction of said interlayer is lower by about 0.1 or less.

27. (original) The article of claim 1 wherein said article is a sheet.

28. (original) The article of claim 27 wherein said sheet is transformed into a three-dimensional form.

29. (original) The article of claim 27 wherein said sheet is transformed into three-dimensional form suitable for a display, consumer product, or decorative support for an object.

30. (original) The article of claim 1 in the form of a display, consumer product, or decorative support for an object.

31. (cancelled)

32. (previously presented) The article of claim 1 wherein said article further has a fluorescent, phosphorescent, electrochromic, photochromic, pearlescent, or effervescent visual effect.

33. (cancelled)

34. (cancelled)

35. (previously presented) The article of claim 1 wherein each layer of said article has a thickness of 1 mm to 100 mm.

IX: EVIDENCE APPENDIX

No evidence under §§ 1.130, 1.131, or 1.132 was entered in this application.

X: RELATED PROCEEDINGS APPENDIX

No related proceeding were identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. §41.37.